^{95}Ru ε decay 2007Sh35,1974Kr02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, G. Mukherjee, A. A. Sonzogni	NDS 111, 2555 (2010)	30-Jun-2009

Parent: ^{95}Ru: E=0.0; $J^\pi=5/2^+$; $T_{1/2}$=1.643 h *13*; Q(ε)=2565 *12*; %ε+%$β^+$ decay=100.0

2007Sh35: source produced by ^{92}Mo(α,n) reaction at E=17 MeV; measured Eγ, Iγ, γγ coin using HPGe detectors. Results agree well with 1974Kr02, however, the gamma energy uncertainties from 2007Sh35 are unrealistically small. Levels reported by 2007Sh35 and not by 1974Kr02 were incorporated. Some weak gamma rays observed by 2007Sh35 were not adopted.

1974Kr02: measured γ′s and γγ-coincidences; Ge(Li).

1973Xe01: measured γ′s and γγ-coincidences; Ge(Li).

1968Pi03: measured Eβ′s (scint), βγ-coincidences (scint,Ge(Li)), γ′s (Ge(Li)), γγ-coincidences (Ge(Li),NaI), and γ(t) (Ge(Li)).

α: Additional information 1.

^{95}Tc Levels

E(level)[#]	J^π[†]	$T_{1/2}$[†]	Comments
0.0	$9/2^+$	20.0 h *1*	
38.91 *4*	$1/2^-$	61 d *2*	%IT=3.88 *32*; %ε+%$β^+$=96.12 *32* E(level): from Adopted Levels.
336.45 *5*	$7/2^+$		
626.91 *5*	$5/2^+$		
646.47 *21*	$3/2^-$		
667.81 *10*	$5/2^-$		
927.92 *6*	$3/2^+$		
956.61[‡] *20*	$11/2^+$		
1085.02 *6*	$(5/2)^+$		
1178.62 *6*	$7/2^+$		
1213.10 *9*	9/2		
1275.5 *3*	$3/2^-$		
1407.54[‡] *24*	$(5/2^-,7/2^-)$		
1433.28 *5*	$5/2^+$		
1632.4[‡] *3*			
1639.54 *14*	$(3/2^-)$		
1691.34 *8*	$5/2^+,7/2^+$		
1747.05 *7*	$(5/2)^+$		
1785.35 *9*	$(7/2)^+$		
1837.5[‡] *3*	$7/2^+,9/2^+$		
1888.23 *10*	$(5/2^-)$		
1978.57 *9*	$3/2^+,5/2^+,7/2^+$		
2086.21 *7*	$3/2^+$		
2168.36 *8*	$7/2^+$		
2189.20 *7*	$5/2^+,7/2^+$		
2203.67 *20*	$(3/2^+,5/2^+)$		
2251.97 *13*	$(7/2)^+$		
2267.58 *8*	$(7/2)^+$		
2324.54 *12*	$5/2^+,7/2^+$		
2328.79 *14*	$(3/2)^+$		
2382.4 *3*	$(5/2^+,7/2^+)$		
2409.55 *18*	$(5/2^+,7/2)$		

[†] From Adopted Levels.

[‡] Level placed following 2007Sh35.

[#] From least-squares fit to Eγ.

^{95}Ru ε decay 2007Sh35,1974Kr02 (continued)

ε,β+ radiations

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)‡	Comments
(155 *12*)	2409.55		0.111 *12*	5.19 *10*	0.111 *12*	εK=0.839 *4*; εL=0.130 *3*; εM+=0.0312 *7*
(183 *12*)	2382.4		0.065 *12*	5.57 *11*	0.065 *12*	εK=0.8444 *22*; εL=0.1256 *17*; εM+=0.0300 *5*
(236 *12*)	2328.79		0.33 *7*	5.11 *11*	0.33 *7*	εK=0.8511 *12*; εL=0.1203 *10*; εM+=0.0286 *3*
(240 *12*)	2324.54		2.37 *17*	4.28 *6*	2.37 *17*	εK=0.8515 *12*; εL=0.1200 *9*; εM+=0.02848 *25*
(297 *12*)	2267.58		1.16 *8*	4.78 *5*	1.16 *8*	εK=0.8555 *7*; εL=0.1169 *6*; εM+=0.02761 *15*
(313 *12*)	2251.97		0.51 *4*	5.19 *5*	0.51 *4*	εK=0.8563 *7*; εL=0.1162 *5*; εM+=0.02744 *14*
(361 *12*)	2203.67		0.093 *4*	6.06 *4*	0.093 *4*	εK=0.8584 *5*; εL=0.1146 *4*; εM+=0.02699 *10*
(376 *12*)	2189.20		1.46 *7*	4.90 *4*	1.46 *7*	εK=0.8589 *5*; εL=0.1142 *4*; εM+=0.02688 *9*
(397 *12*)	2168.36		1.95 *7*	4.82 *4*	1.95 *7*	εK=0.8596 *4*; εL=0.1137 *3*; εM+=0.02674 *8*
(479 *12*)	2086.21		4.41 *24*	4.64 *4*	4.41 *24*	εK=0.8616 *3*; εL=0.11207 *20*; εM+=0.02631 *6*
(586 *12*)	1978.57		3.69 *14*	4.90 *3*	3.69 *14*	εK=0.8634 *2*; εL=0.11068 *13*; εM+=0.02593 *4*
(677 *12*)	1888.23		0.64 *3*	5.79 *3*	0.64 *3*	εK=0.8644 *2*; εL=0.1099 *1*; εM+=0.02572 *3*
(728 *12*)	1837.5		0.028 *7*	7.21 *11*	0.028 *7*	εK=0.8649 *1*; εL=0.10951 *9*; εM+=0.02562 *3*
(780 *12*)	1785.35		1.55 *19*	5.53 *6*	1.55 *19*	εK=0.86528 *9*; εL=0.10919 *7*; εM+=0.02553 *2*
(818 *12*)	1747.05		4.27 *24*	5.13 *3*	4.27 *24*	εK=0.8655; εL=0.10898 *7*; εM+=0.02547 *2*
(874 *12*)	1691.34		1.55 *9*	5.63 *3*	1.55 *9*	εK=0.8659; εL=0.10871 *6*; εM+=0.02540 *2*
(933 *12*)	1632.4		0.020 *6*	7.58 *13*	0.020 *6*	εK=0.8662; εL=0.10846 *5*; εM+=0.02533 *2*
(1132 *12*)	1433.28		24.0 *10*	4.671 *21*	24.0 *10*	εK=0.8670; εL=0.10780 *4*; εM+=0.02516 *1*
(1157 *12*)	1407.54		0.0898 *20*	7.117 *14*	0.0898 *20*	εK=0.8670; εL=0.10773 *4*; εM+=0.02514 *1*
(1290 *12*)	1275.5	6.9×10^{-5} *20*	0.035 *7*	7.62 *9*	0.035 *7*	av Eβ=124.8 *52*; εK=0.8658 *3*; εL=0.10723 *7*; εM+=0.02501 *2*
(1352# *12*)	1213.10	0.0005 *3*	0.11 *6*	7.17 *24*	0.11 *6*	av Eβ=151.7 *52*; εK=0.8636 *6*; εL=0.1068 *1*; εM+=0.02491 *3* Log *ft*: log $f^{1u}t$=7.9 *+5−2* discrepant with decay scheme.
(1386 *12*)	1178.62	0.043 *6*	6.2 *3*	5.440 *23*	6.2 *3*	av Eβ=166.6 *52*; εK=0.8618 *8*; εL=0.10652 *12*; εM+=0.02484 *3*
(1480 *12*)	1085.02	0.013 *2*	0.77 *12*	6.40 *7*	0.78 *12*	av Eβ=206.8 *52*; εK=0.8536 *15*; εL=0.10533 *20*; εM+=0.02455 *5*
(1608 *12*)	956.61	0.0017 *6*	0.039 *14*	7.77 *16*	0.041 *15*	av Eβ=262.0 *52*; εK=0.833 *3*; εL=0.1026 *4*; εM+=0.02391 *8*
1932† *30*	626.91	1.3 *1*	6.1 *5*	5.74 *4*	7.4 *6*	av Eβ=405.3 *53*; εK=0.722 *6*; εL=0.0885 *7*; εM+=0.02062 *16*
2222† *30*	336.45	12.6 *5*	24.4 *8*	5.258 *17*	37.0 *11*	av Eβ=533.4 *54*; εK=0.574 *7*; εL=0.0703 *8*; εM+=0.01636 *19*

† From Eβ=910 *30* and 1200 *30* (1968Pi03).
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

^{95}Ru ε decay 2007Sh35,1974Kr02 (continued)

γ(^{95}Tc)

Iγ normalization: From ΣIγ(to g.s.+38-keV state)=100.

E_γ	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]	α[†]	Comments
157.4[c] *3*	0.05 *2*	1085.02	(5/2)$^+$	927.92	3/2$^+$	[M1,E2]		0.16 *9*	α(K)=0.14 *7*; α(L)=0.020 *12*; α(M)=0.0037 *23*; α(N)=0.0006 *4*; α(O)=2.8×10^{-5} *12* α(N+..)=0.0006 *4*
254.58 *20*	0.22 *1*	1433.28	5/2$^+$	1178.62	7/2$^+$	(M1)		0.0226	α(K)=0.0198 *3*; α(L)=0.00231 *4*; α(M)=0.000419 *6*; α(N)=6.67×10^{-5} *10*; α(O)=4.45×10^{-6} *7* α(N+..)=7.12×10^{-5} *10*
290.38 *10*	3.73 *10*	626.91	5/2$^+$	336.45	7/2$^+$	(M1+E2)	+0.17 *17*	0.0165 *10*	α(K)=0.0144 *8*; α(L)=0.00169 *13*; α(M)=0.000307 *23*; α(N)=4.9×10^{-5} *4*; α(O)=3.23×10^{-6} *15* α(N+..)=5.2×10^{-5} *4*
301.01 *10*	2.13 *6*	927.92	3/2$^+$	626.91	5/2$^+$	(M1+E2)	−0.21 *3*	0.01519 *25*	α(K)=0.01330 *22*; α(L)=0.00156 *3*; α(M)=0.000283 *5*; α(N)=4.49×10^{-5} *8*; α(O)=2.97×10^{-6} *5* α(N+..)=4.79×10^{-5} *9*
312.6[c] *8*	0.22 *15*	1747.05	(5/2)$^+$	1433.28	5/2$^+$	(M1)		0.01341 *21*	α(K)=0.01175 *19*; α(L)=0.001364 *21*; α(M)=0.000247 *4*; α(N)=3.93×10^{-5} *6*; α(O)=2.63×10^{-6} *4* α(N+..)=4.20×10^{-5} *7*
(331.38[†] *7*)	0.0025[‡] *8*	667.81	5/2$^-$	336.45	7/2$^+$				
336.40 *10*	70.8 *5*	336.45	7/2$^+$	0.0	9/2$^+$	M1+E2	+0.33 *6*	0.0118 *3*	α(K)=0.01030 *23*; α(L)=0.00121 *4*; α(M)=0.000220 *6*; α(N)=3.48×10^{-5} *9*; α(O)=2.28×10^{-6} *5* α(N+..)=3.71×10^{-5} *10*
348.20 *10*	0.21 *1*	1433.28	5/2$^+$	1085.02	(5/2)$^+$	(M1)		0.01024	α(K)=0.00898 *13*; α(L)=0.001038 *15*; α(M)=0.000188 *3*; α(N)=3.00×10^{-5} *5*; α(O)=2.01×10^{-6} *3* α(N+..)=3.20×10^{-5} *5*
403.8[#c] *4*	0.028[#] *7*	2382.4	(5/2$^+$,7/2$^+$)	1978.57	3/2$^+$,5/2$^+$,7/2$^+$				
421.3 *2*	0.07 *1*	2168.36	7/2$^+$	1747.05	(5/2)$^+$				
446.4[c] *3*	0.08 *4*	2086.21	3/2$^+$	1639.54	(3/2$^-$)				
(458.0[†] *2*)	0.055[‡] *8*	1085.02	(5/2)$^+$	626.91	5/2$^+$				
477.3 *2*	0.05 *1*	2168.36	7/2$^+$	1691.34	5/2$^+$,7/2$^+$				
504.8 *3*	0.12 *5*	1433.28	5/2$^+$	927.92	3/2$^+$				
551.62 *10*	1.72 *6*	1178.62	7/2$^+$	626.91	5/2$^+$				
560.0[c] *5*	0.05 *3*	2251.97	(7/2)$^+$	1691.34	5/2$^+$,7/2$^+$				

^{95}Ru ε decay 2007Sh35,1974Kr02 (continued)

γ(^{95}Tc) (continued)

E_γ	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π	α[†]
564.09[@] 25	0.042[&] 3	2203.67	(3/2$^+$,5/2$^+$)	1639.54	(3/2$^-$)	
572.4[c] 4	0.13 6	1785.35	(7/2)$^+$	1213.10	9/2	
576.1[c] 6	0.04 3	2267.58	(7/2)$^+$	1691.34	5/2$^+$,7/2$^+$	
580.8[c] 8	0.06 6	2328.79	(3/2)$^+$	1747.05	(5/2)$^+$	
591.42 10	1.20 5	927.92	3/2$^+$	336.45	7/2$^+$	
606.3[#] 5	0.08[#] 3	1691.34	5/2$^+$,7/2$^+$	1085.02	(5/2)$^+$	
607.3[#] 5	0.20[#] 6	646.47	3/2$^-$	38.91	1/2$^-$	
626.83 10	18.0 5	626.91	5/2$^+$	0.0	9/2$^+$	0.011 5
628	0.13 4	667.81	5/2$^-$	38.91	1/2$^-$	
652.81 10	1.03 4	2086.21	3/2$^+$	1433.28	5/2$^+$	
662.2[#c] 3	0.042[#] 7	2409.55	(5/2$^+$,7/2)	1747.05	(5/2)$^+$	
689.3 3	0.08 1	2328.79	(3/2)$^+$	1639.54	(3/2$^-$)	
711.54 20	0.18 2	1639.54	(3/2$^-$)	927.92	3/2$^+$	
735.1[#] 2	0.47 2	2168.36	7/2$^+$	1433.28	5/2$^+$	
748.50 10	1.63 6	1085.02	(5/2)$^+$	336.45	7/2$^+$	
755.86 10	0.22 2	2189.20	5/2$^+$,7/2$^+$	1433.28	5/2$^+$	
786.8[c] 4	0.05 4	1433.28	5/2$^+$	646.47	3/2$^-$	
806.28 10	4.09 17	1433.28	5/2$^+$	626.91	5/2$^+$	
819.07 10	0.65 3	1747.05	(5/2)$^+$	927.92	3/2$^+$	
834.4[c] 3	0.07 1	2267.58	(7/2)$^+$	1433.28	5/2$^+$	
842.16 10	1.28 5	1178.62	7/2$^+$	336.45	7/2$^+$	
[x]847.6 4	0.07 2					
876.7 3	0.22 2	1213.10	9/2	336.45	7/2$^+$	
889.00 10	1.93 10	927.92	3/2$^+$	38.91	1/2$^-$	
891 1	0.18 9	2324.54	5/2$^+$,7/2$^+$	1433.28	5/2$^+$	
893.3 2	0.16 7	1978.57	3/2$^+$,5/2$^+$,7/2$^+$	1085.02	(5/2)$^+$	
956.6 2	0.042 15	956.61	11/2$^+$	0.0	9/2$^+$	
960.1 2	0.22 2	1888.23	(5/2$^-$)	927.92	3/2$^+$	
975.9[c] 3	0.06 1	2409.55	(5/2$^+$,7/2)	1433.28	5/2$^+$	
989.72[#] 10	0.71 3	2168.36	7/2$^+$	1178.62	7/2$^+$	
992.3[†c] 7	0.027[‡] 8	1639.54	(3/2$^-$)	646.47	3/2$^-$	
1010.57 10	0.73 3	2189.20	5/2$^+$,7/2$^+$	1178.62	7/2$^+$	
1050.68 10	2.63 11	1978.57	3/2$^+$,5/2$^+$,7/2$^+$	927.92	3/2$^+$	
1064.39 10	0.75 6	1691.34	5/2$^+$,7/2$^+$	626.91	5/2$^+$	
1070.81[@]		1407.54	(5/2$^-$,7/2$^-$)	336.45	7/2$^+$	
(1084.98[†] 10)	0.031[‡] 5	1085.02	(5/2)$^+$	0.0	9/2$^+$	
1088.9 2	0.22 5	2267.58	(7/2)$^+$	1178.62	7/2$^+$	
1096.80 10	21.2 10	1433.28	5/2$^+$	336.45	7/2$^+$	
1100[c] 1	0.12 5	1747.05	(5/2)$^+$	646.47	3/2$^-$	
1104.3 2	0.21 6	2189.20	5/2$^+$,7/2$^+$	1085.02	(5/2)$^+$	

^{95}Ru ε decay 2007Sh35,1974Kr02 (continued)

γ(^{95}Tc) (continued)

E_γ	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π	E_γ	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π
1118.69[@] 25	0.052[&] 2	2203.67	(3/2$^+$,5/2$^+$)	1085.02	(5/2)$^+$	1562.3 2	0.16 1	2189.20	5/2$^+$,7/2$^+$	626.91	5/2$^+$
1120.11 10	0.95 5	1747.05	(5/2)$^+$	626.91	5/2$^+$	1625.1 2	0.09 1	2251.97	(7/2)$^+$	626.91	5/2$^+$
1158.4[b] 1	0.71[b] 18	1785.35	(7/2)$^+$	626.91	5/2$^+$	1632.4 3	0.020 6	1632.4		0.0	9/2$^+$
1158.4[b] 1	0.85[b] 20	2086.21	3/2$^+$	927.92	3/2$^+$	1642.0 2	0.10 1	1978.57	3/2$^+$,5/2$^+$,7/2$^+$	336.45	7/2$^+$
1178.7 2	5.20 25	1178.62	7/2$^+$	0.0	9/2$^+$	1691.4 2	0.09 1	1691.34	5/2$^+$,7/2$^+$	0.0	9/2$^+$
1182.8 3	0.22 3	2267.58	(7/2)$^+$	1085.02	(5/2)$^+$	1697.6 2	0.12 1	2324.54	5/2$^+$,7/2$^+$	626.91	5/2$^+$
(1213.10[†] 10)	0.023[‡] 3	1213.10	9/2	0.0	9/2$^+$	1702.0[#c] 3	0.099[#] 15	2328.79	(3/2)$^+$	626.91	5/2$^+$
1220.4 3	0.10 2	1888.23	(5/2$^-$)	667.81	5/2$^-$	1747.0 3	0.04 1	1747.05	(5/2)$^+$	0.0	9/2$^+$
1236.5 3	0.035 7	1275.5	3/2$^-$	38.91	1/2$^-$	1756.1[#] 10	0.014[#] 7	2382.4	(5/2$^+$,7/2$^+$)	626.91	5/2$^+$
1240.4[#] 2	0.08 5	2168.36	7/2$^+$	927.92	3/2$^+$	1785.4 2	0.60 5	1785.35	(7/2)$^+$	0.0	9/2$^+$
1243.6[#] 3	0.04 3	2328.79	(3/2)$^+$	1085.02	(5/2)$^+$	[x]1814.3 3	0.035 15				
1261.36 10	0.33 2	1888.23	(5/2$^-$)	626.91	5/2$^+$	1831.9[#] 2	0.24 2	2168.36	7/2$^+$	336.45	7/2$^+$
1295.8[#c] 9	0.014[#] 7	2382.4	(5/2$^+$,7/2$^+$)	1085.02	(5/2)$^+$	1837.5 3	0.028 7	1837.5	7/2$^+$,9/2$^+$	0.0	9/2$^+$
1324.0[#c] 3	0.014[#] 7	2251.97	(7/2)$^+$	927.92	3/2$^+$	1852.8 2	0.12 1	2189.20	5/2$^+$,7/2$^+$	336.45	7/2$^+$
1339.62 10	0.25 2	2267.58	(7/2)$^+$	927.92	3/2$^+$	1931.1 2	0.29 3	2267.58	(7/2)$^+$	336.45	7/2$^+$
1351.9 2	0.86 6	1978.57	3/2$^+$,5/2$^+$,7/2$^+$	626.91	5/2$^+$	1978.3[c] 4	0.014 5	1978.57	3/2$^+$,5/2$^+$,7/2$^+$	0.0	9/2$^+$
1355.1 2	0.79 5	1691.34	5/2$^+$,7/2$^+$	336.45	7/2$^+$	1988.1 2	0.68 6	2324.54	5/2$^+$,7/2$^+$	336.45	7/2$^+$
1400.8 3	0.030 6	2328.79	(3/2)$^+$	927.92	3/2$^+$	2047.1 2	0.35 3	2086.21	3/2$^+$	38.91	1/2$^-$
1407.55[@] 25	0.091[&] 2	1407.54	(5/2$^-$,7/2$^-$)	0.0	9/2$^+$	2168.1[#] 3	0.046 6	2168.36	7/2$^+$	0.0	9/2$^+$
1410.63 10	2.51 16	1747.05	(5/2)$^+$	336.45	7/2$^+$	2189.3 3	0.041 6	2189.20	5/2$^+$,7/2$^+$	0.0	9/2$^+$
1418.7 3	0.033 6	2086.21	3/2$^+$	667.81	5/2$^-$	2252.0 2	0.36 3	2251.97	(7/2)$^+$	0.0	9/2$^+$
1433.28 10	0.65 4	1433.28	5/2$^+$	0.0	9/2$^+$	2267.6 2	0.09 1	2267.58	(7/2)$^+$	0.0	9/2$^+$
1448.93 20	0.13 1	1785.35	(7/2)$^+$	336.45	7/2$^+$	2290.0 3	0.024 4	2328.79	(3/2)$^+$	38.91	1/2$^-$
1459.32 10	2.12 13	2086.21	3/2$^+$	626.91	5/2$^+$	2324.5 2	1.42 14	2324.54	5/2$^+$,7/2$^+$	0.0	9/2$^+$
1522.0 3	0.028 7	2168.36	7/2$^+$	646.47	3/2$^-$	2382.5 4	0.010 2	2382.4	(5/2$^+$,7/2$^+$)	0.0	9/2$^+$
1541.3[#] 2	0.28 2	2168.36	7/2$^+$	626.91	5/2$^+$	2410.2 3	0.010 2	2409.55	(5/2$^+$,7/2)	0.0	9/2$^+$

[†] From the adopted gammas.
[‡] From the strongest intensity for each state and the adopted branching ratios.
[#] From 1973Xe01. Iγ renormalized by evaluator to Iγ(336γ)=70.8.
[@] From 2007Sh35, δEγ set as 0.25 keV, considerably larger than the values quoted by 2007Sh35.
[&] From 2007Sh35.
[a] For absolute intensity per 100 decays, multiply by 0.9871.
[b] Multiply placed with intensity suitably divided.
[c] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{95}_{43}Tc_{52}$-5

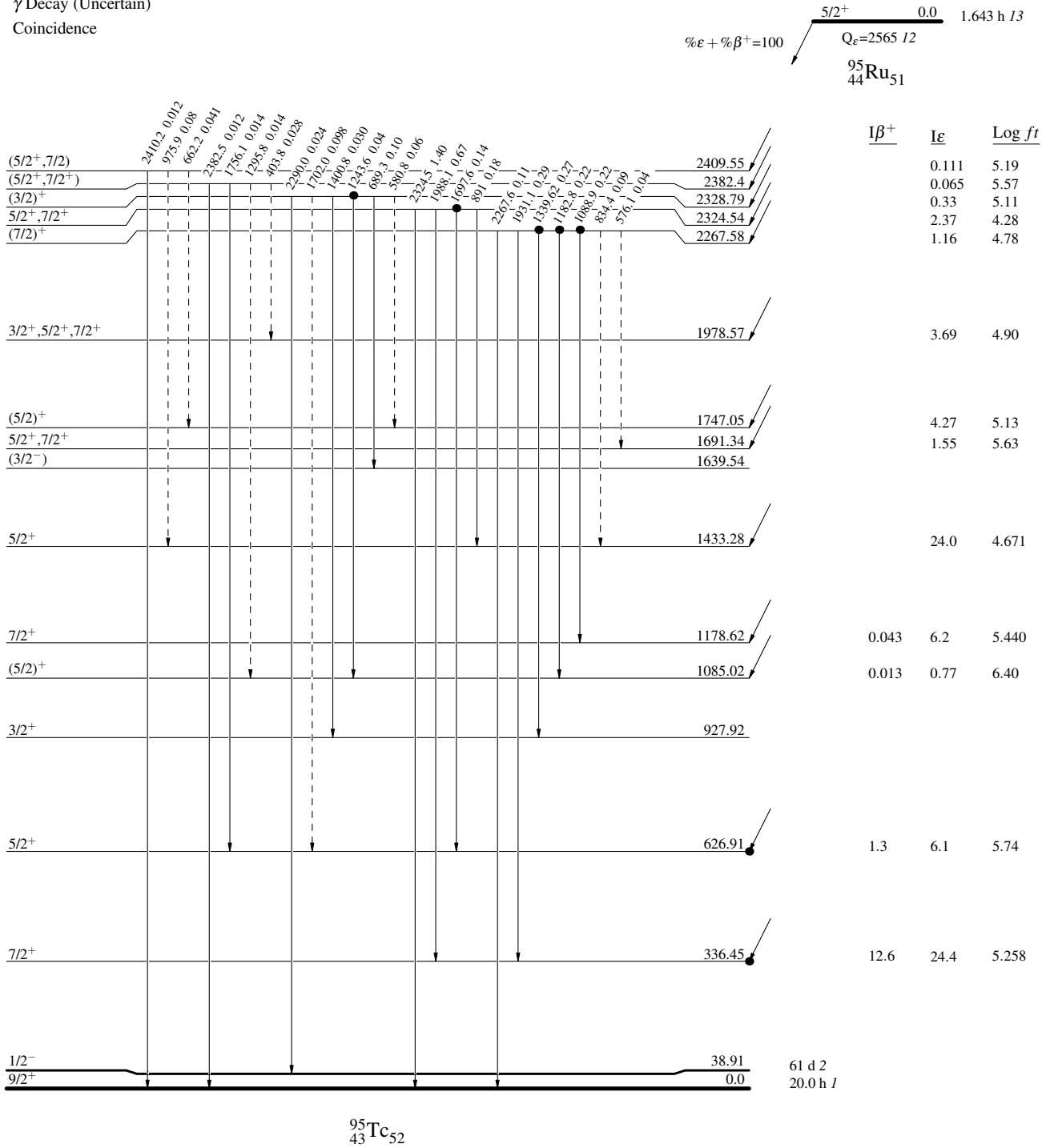
^{95}Ru ε decay 2007Sh35,1974Kr02

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

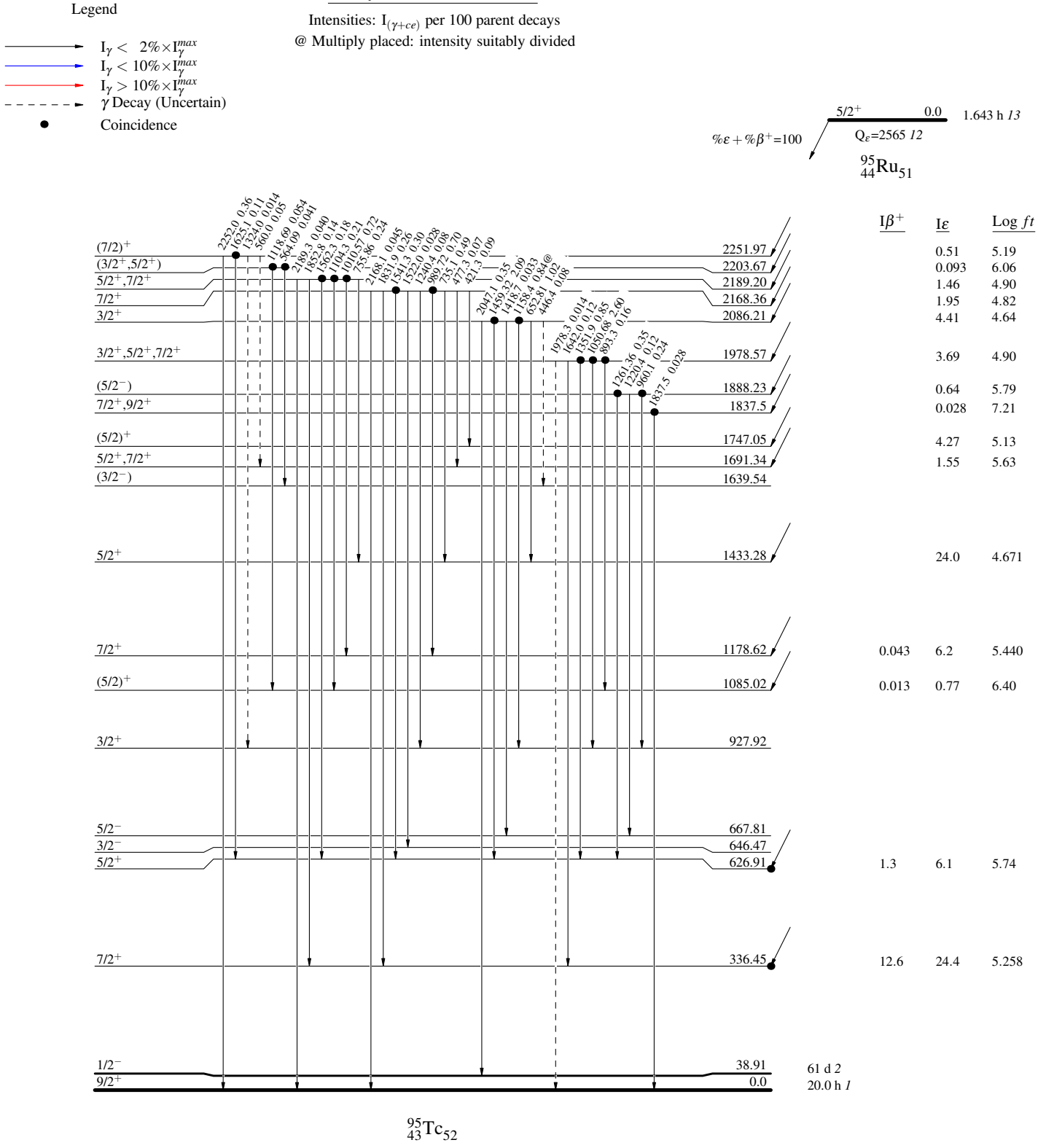


^{95}Ru ε decay 2007Sh35,1974Kr02

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

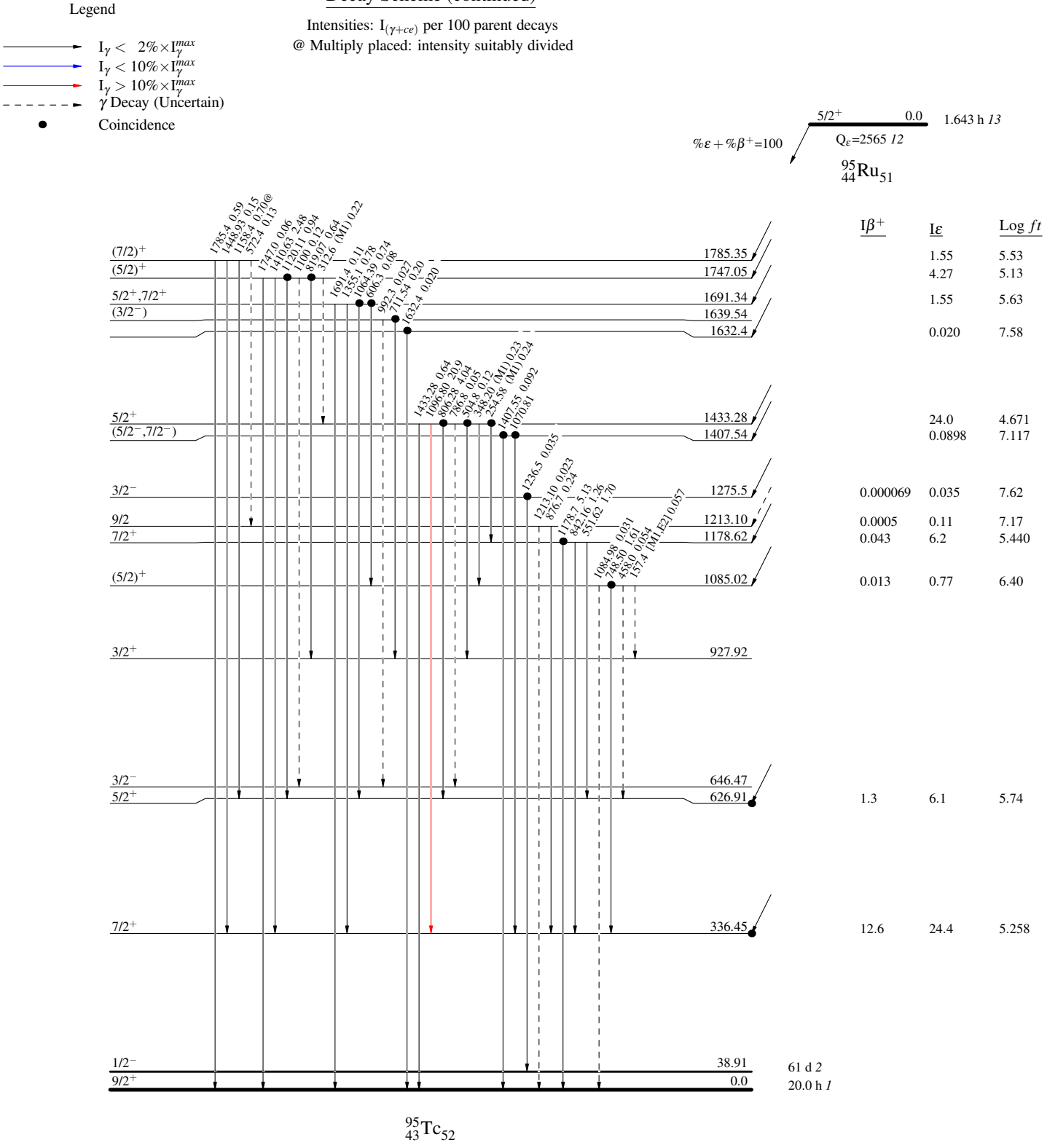
@ Multiply placed: intensity suitably divided



^{95}Ru ε decay 2007Sh35,1974Kr02

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided



^{95}Ru ε decay 2007Sh35,1974Kr02

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided